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10/823,283

04/13/2004

Tremitchell L. Wright

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WHIRLPOOL PATENTS COMPANY - MD 0750
500 RENAISSANCE DRIVE - SUITE 102
ST. JOSEPH, MI 49085

EXAMINER

YAKULIS, JEFFREY C

ART UNIT

PAPER NUMBER

1709

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/823,283

Applicant(s)

WRIGHT ET AL.

Examiner

Jeff Yakulis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 27-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-32 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C.

121:

I. Claims 1-26, drawn to an electrochemical cell design using parallel plates, classified in class 204, subclass 278.5.

II. Claims 27-32, drawn to chemical generation system, classified in class 204, subclass 275.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case the subcombinations do not overlap in scope, are not obvious variants of , and subcombination I has separate utility such as chlorinator systems for pools or raw peroxide production. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a).

Applicant is advised that if any claim presented in a continuation or divisional

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application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

5. The examiner has required restriction between combination and subcombination inventions. Where applicant elects a subcombination, and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. During a telephone conversation with John

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Colligan on 2/15/07 a provisional election was made with traverse to prosecute the invention of I, claims 1-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

7. Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 9 appears to be incomplete and does not recite any further limitation.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 1 recites the limitation "the resultants" in line 14 of claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "said automatic cleaning appliance" in claim 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "said automatic cleaning appliance" in claim 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2, 8, 10, 11, 13, 16, 17, 18, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Von Broembsen Patent No. 6,821,398.

Regarding claim 1, Von Broembson teaches: a first metallic plate, a last metallic plate and a plurality of intermediate metallic plates (col. 5 lines 11-16 and figure 2 show a first and last electrode; col. 5 lines 40-43 discuss a plurality of plates that make up each electrode), each of said plates having two essentially parallel sides (figure 2A shows plates having parallel sides) with a large surface area in comparison with a peripheral side connecting said parallel sides (does not specifically state this but this is simply the general nature of a plate) said plurality of plates arranged with one of said parallel sides of one plate

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facing one of said parallel sides of an adjacent plate, for each of said plurality of intermediate plates (figure 2A demonstrates this), a connection between a positive electrode of a source of direct electrical current and said first plate and a connection between a negative electrode of said source of direct electrical current and said last plate (col. 4 lines 51-64, figure 2 shows the electrodes items 40 and 42, refer to col. 5 lines 11-16 as to why only 2 electrodes are shown), an inlet to allow the introduction of a fluid containing a chemical composition to be decomposed by said cell device during a period of decomposition (col. 4 lines 30-41, item 28 inlet pipe) and an outlet to allow the dispensing of the resultants of the decomposition of said chemical composition (col. 4 lines 30-41, item 18 delivery pipe, also refer to col. 7 lines 67 and col. 8 lines 1-5).

Regarding claim 2, Von Broembson teaches said plurality of plates are arranged in a straight line (refer to figure 2A).

Regarding claim 8, Von Broembson teaches said fluid containing a chemical composition comprises water and said resultants comprises hydrogen and oxygen (col. 7 lines 65 and col. 8 lines 1-5, hypochlorite NaOCl).

Regarding claim 10, Von Broembson teaches said fluid containing a chemical composition comprises water and a dissolved salt and said resultants comprise at least chlorine (col. 7 lines 65 and col. 8 lines 1-5, hypochlorite NaOCl).

Regarding claim 11, Von Broembson teaches a storage space provided in said device arranged to receive a supply of a salt composition in solid form to be

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dissolved by water obtained from a source of water in said appliance to be used in said cleaning of objects (col. 4 lines 65-67 and col. 5 lines 1-2).

Regarding claim 13, Von Broembson teaches said positive electrode connection at said first plate and said negative electrode connection at said last plate comprise the sole direct electrical connections between said source of direct electrical current and said plates. (col. 4 lines 51-54 and col. 5 lines 49-63 shows that only the end electrodes are directly connected; the rest of the plates are connected via current connector tabs).

Regarding claim 16, Von Broembsen teaches said fluid comprises an electrolyte and said plates are arranged in an electrical series connection with said electrolyte providing an electrical connection between adjacent plates (col. 5 lines 25-27 the electrodes function as plates in this connection, the electrolyte fluid is the same as instant application so its status as an electrolyte is inherent; Also, note col. 7 lines 48-53 as to why electrodes are arranged in stacks and then connected in series).

Regarding claim 17, Von Broembsen teaches said fluid containing a chemical composition comprises water obtained from a source of water in said appliance to be used in said cleaning of objects, and including a filter upstream of said plates (col. 4 lines 30-41 filter is item 16; water is not specifically used for cleaning of objects but since the chlorinator produces hypochlorite, a known bleach, it could inherently clean objects).\

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Regarding claim 18, Von Broembsen teaches a filter comprising a water softener mechanism (col. 4 lines 65-67 and col. 5 line 1; dispenser can add water softener grade salt to water).

With regard to claim 26, no further structural limitations are recited, therefore the claim continues to read on the device Von Broembsen. The manner of operating a device does not differentiate an apparatus claim from the prior art. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structure limitations of the claim. See MPEP 2114.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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12. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 and further in view of Bentley Patent No. 6,716,325.

Regarding claim 22, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition.

Bentley is relevant because it is directed to an electrolytic cell for generation of hypochlorite. Bentley teaches including a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition (col. 1 lines 41-47). Bentley further notes hypochlorite generators have the tendency to form calcareous and magnesium deposits on the cathode and can become inefficient as a result (col. 1 lines 41-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a back-washing mechanism of Bentley in the hypochlorite generator taught by Von Broembsen in order to solve the problem of deposits forming on the cathode and thus increasing overall efficiency.

Regarding claim 23, Bentley teaches back-washing via a chemical technique (col. 1 lines 41-47; hydrochloric acid in this case).

Regarding claim 24, Bentley teaches back-washing via a thermal technique (col. 1 lines 41-47; **dilute** hydrochloric acid, mixing acid and water generates heat: a thermal technique).

Regarding claim 25, Bentley teaches back-washing via a mechanical technique (col. 1 lines 41-47; high flow rates around the cathode can mechanically could mechanically remove deposits).

14. Claims 14, 15, 19, and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 in view of Grannersberger Patent No. 6,391,167.

Regarding claim 14, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: a source of direct electrical current comprises a source of rectified alternating current.

Grannersberger is relevant because it is directed toward an electrolytic water chlorinator. Grannersberger teaches a source of direct electrical current comprising a source of rectified alternating current (col. 3 lines 54-67 input bridge item 102 provides for the rectification). Grannersberger further notes that the input bridge provides for low heat generation and surge protection (col. 3 lines 65-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an input bridge [102] of Grannersberger into the electrolytic chlorinator of Von Broembsen because it solves the problem overheating and provides for surge protection necessary for protecting the electrical components from damage (col. 3 lines 65-67).

Regarding claim 15, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: a source of direct electrical current comprises a source of inverted alternating.

Grannersberger is relevant because it is directed toward an electrolytic water chlorinator. Grannersberger teaches a source of direct electrical current comprises a source of inverted alternating current (col. 3 lines 54-67 input bridge item 102). The inverter switching topology comes in the form a field effect transistor (FET) half bridge rectifier (col. 3 lines 55-56). Though not specifically stated the inverted current is inherent in this transistor design. Grannersberger notes that the input bridge provides for low heat generation and surge protection (col. 3 lines 65-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an input bridge [102] of Grannersberger into the electrolytic chlorinator of Von Broembsen because it solves the problem overheating and provides for surge protection necessary in protecting the electrical components from damage (col. 3 lines 65-67).

Regarding claim 19 and 20, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: a control arranged to monitor voltage between the first and last plate and a control arranged to monitor current flowing through the electrodes.

Grannersberger is relevant because it is directed toward an electrolytic water chlorinator. Grannersberger teaches a control arranged to monitor a voltage across said first and last plates and a control arranged to regulate an electrical current flowing through the electrodes (col. 4 lines 1-8; switch mode controller [105]). Grannersberger notes this device allows for salt overload immunity and improved chlorine output stability (col. 4 lines 1-8). It further would

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have been beneficial because the device includes a current limiting function, which protects the cell from becoming damaged under short circuit conditions (col. 4 lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the switch mode controller [105] of Grannersberger to the electrolytic chlorinator of Von Broembsen in order to prevent overloading salt, allow for improved chlorine output stability, and prevent damage to the cell (col. 4 lines 1-8).

15. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 in view of Hamand Patent No. 6,513,180.

Regarding claim 4, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: the automatic cleaning appliance is a fabric washing machine.

Hamand is relevant because it deals with a bleach generating device using an electrolytic cell (col. 4 lines 1-3). The electrochemical bleach generating device is arranged within a washing machine (col. 2 lines 12-26). Hamand notes the advantage of not having to add bleach manually during operation (col. 2 lines 12-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a bleach generator of Von Broembsen into the washing machine design of Hamand in order to make practical use of the cell of Von Broembsen and that one would have a reasonable expectation of success in applying the cell as such.

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16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 in view of Hamand Patent No. 6,513,180 as applied to claim 4 above, and further in view of Wiegand Patent No. 2,917,685.

Modified Von Broembsen teaches all the structure with regards to claim 4, but fails to disclose the source of direct electrical current comprising a source of rectified alternating current and where the electrical components providing the rectified current are arranged to be cooled with water from the washing machine.

Wiegand is relevant because it solves the problem of cooling electrical components. Wiegand teaches cooling electrical components with water (col. 2 lines 26-29) and specifically rectifier systems (col. 2 lines 48-51). Wiegand also notes that it is well known that rectifiers are needed to be kept as cool as possible to prevent their destruction (col. 3 lines 31-34).

It would have been obvious of one of ordinary skill in the art at the time the invention was made to utilize a device similar to Wiegand's in modified Von Broembsen because it solves the problem associated with overheating of electrical components. Since this device is being utilized in a washing machine it would have been obvious to obtain from the nearest available source and thus using water from the washing machine itself.

17. Claims 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 as applied to claims 1 and 10 above and further in view of Sicilano Patent No. 6,125,481.

Regarding claim 12, Von Broembsen teaches the previous limitations set forth in claim 1 and 10 aforementioned above. Von Broembsen fails to disclose: a lockout mechanism for the appliance and an activating apparatus for the lockout mechanism, the activating apparatus including a sensor arranged to detect a concentration level of chlorine.

Sicilano is relevant because it solves the problem of being able to control the amount of chlorine delivered to a body of water. Sicilano teaches a lockout mechanism for said appliance and an activating apparatus for said lockout mechanism, said activating apparatus including a sensor arranged to detect the level of said chlorine (col. 5 lines 53-63 and figure 3; LED light and controller act as the "lockout mechanism").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the lockout mechanism and sensor device disclosed by Sicilano into the device set forth by Von Broembsen because it is known that excessive chlorination can be detrimental as a skin and eye irritant and thus would eliminate the problem associated with excessive chlorination.

Regarding claim 21, Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above, but fails to disclose a control arranged to monitor a pressure change between the inlet and outlet.

Sicilano is relevant because it solves the problem of monitoring pressure between an inlet and an outlet in a chlorination system. Sicilano teaches a control arranged to monitor the pressure change between an inlet and outlet (col.

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2, lines 10-12 and col. 5 lines 19-39; notice one pressure sensor is located upstream and another downstream).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the pressure monitoring device of Sicilano to accurately control and monitor pressure between the inlet and outlet of the electrolytic chlorinator of Von Broembsen.

18. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 as applied to claim 1 and further in view of Ahmed et al. Patent No. 5,076,952.

Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: said automatic cleaning appliance is a foodware washing machine.

Ahmed et al. is relevant because it is directed toward a bleaching system in dishwashers. Ahmed et al. notes chlorine releasing agents are beneficial in cleaning (col. 2 line 26-27). It is also noted that the most difficult food soils to remove are proteinaceous soils (col. 2 lines 37-44). Ahmed et al. further teaches that an appropriate concentration of sodium hypochlorite bleach is useful in removing proteinaceous soils (col. 2 lines 48-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to attempt to use a device similar to Von Broembson's in the washing machine discussed by Ahmed because it is known that sodium hypochlorite bleach is useful in removing proteinaceous soils from dishware.

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19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 in view of Ahmed et al. Patent No. 5,076,952 as applied to claim 6 above, and further in view of Wiegand Patent No. 2,917,685.

Modified Von Broembsen teaches all the limitations of claim 6 above, but fails to disclose a source of direct electrical current comprises a source of rectified alternating current and where the electrical components providing the rectified current are arranged to be cooled with water used in the washing machine.

Wiegand is relevant because it solves the problem of cooling electrical components. Wiegand teaches cooling electrical components with water (col. 2 lines 26-29) and specifically rectifier systems (col. 2 lines 48-51). Wiegand also notes that it is well known that rectifiers are needed to be kept as cool as possible to prevent destruction (col. 3 lines 31-34).

It would have been obvious of one of ordinary skill in the art at the time the invention was made to utilize the water cooling device of Wiegand's into the electrolytic chlorinator of modified Von Broembsen because it solves the problem associated with overheating of electrical components. Since this device is being utilized in a foodware washing machine it would have been obvious to obtain from the nearest available source and thus using water from the foodware washing machine

20. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Von Broembsen Patent No. 6,821,398 in view of Offenloch Patent No. 4,599,158.

Von Broembsen teaches the previous limitations set forth in claim 1 aforementioned above. Von Broembsen fails to disclose: the plurality of plates are arranged in an arc.

Ofenloch is relevant because it is directed to an electrolytic apparatus for the electrolysis of water. Ofenloch teaches two ways of increasing the rate of production of gases in an electrolytic cell one being allowing the ions to move more freely in solution (col. 1 lines 37-41). Ofenloch says one way to increase the movement of ions is to introduce an oscillating magnetic field (col. 1 lines 42-46). It is then noted one way to take advantage of this is to arrange the electrodes perpendicular to the magnetic field (col. 1 lines 60-64; note figure 1 for the arrangement of the electrodes). This arrangement is essentially arc-like with electrodes surrounding a center point and going around 360 degrees.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an electrode design similar to Ofenloch to the electrolytic chlorinator of Von Broembsen in order to take advantage of increased production rate of gases.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Yakulis whose telephone number is 571-272-9807. The examiner can normally be reached on M-F 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-9827. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCY

Barbara Gilliam

**BARBARA GILLIAM
PRIMARY EXAMINER**